

NON-WIRES SOLUTIONS UPDATE

Exploring reliable, cost-effective non-construction transmission solutions

Vol. 2

May 2004

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BPA tests non-wires solutions to building a transmission line on the Olympic Peninsula

A utility, two paper companies and the U.S. Navy recently helped the Bonneville Power Administration test its ability to reduce congestion on transmission lines in the Olympic Peninsula by voluntarily reducing transmission loads during times of critical peak demand as part of a pilot project.

Using an Internet-based trading platform, known as the Demand Exchange, BPA simulated severe weather event and asked the four pilot participants to reduce their need for transmission services. BPA posted an hourly price per megawatt, giving pilot participants the chance to accept, reject or counter the offer. Participants then bid to reduce their demand using backup generation or shifting load to other hours.

The tests occurred over four days in March. During the tests, BPA was able to purchase an average of 22 megawatts of peak demand reduction during each hour of a simulated event. This is about one year's load growth on the Peninsula. "We were hoping to achieve between 10 to 20 megawatts of deferred peak demand and potential generation, so this pilot gave us solid results" said Brad Miller, BPA project manager.

BPA developed the pilot to test the feasibility of contracting with large energy users to reduce their transmission use during critical periods, thus reducing the likelihood of voltage instability and ultimately a blackout.

"The Olympic Peninsula offered us an ideal location because it is an environmentally sensitive area with increasing demand for electricity and limited transmission capacity. We will now analyze this information to see if a demand reduction program can adequately reduce load and provide us with a viable alternative for postponing construction of a new transmission line at least several years," Miller said.

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The Olympic Peninsula is currently served by transmission lines carrying more than 1,000 megawatts of load. As early as December 2007, the transmission lines on the Peninsula may not be capable of bringing enough electricity to the area if a facility is out during peak periods of cold weather.

Participants in the pilot included Nippon Paper Industries U.S.A of Port Angeles, Wash.; Port Townsend Paper Company of Port Townsend, Wash.; Mason County Public Utility District #3

(continued on page 2)



Innovative non-wires technologies explored in pilot projects

BPA is exploring a variety of innovative technologies to find non-wires alternatives that can help address the region's transmission needs. A quick overview of some of the pilots under way or being developed is listed below.

Direct load control pilot (Ashland, Ore.)

BPA plans to sponsor a pilot project to sign up residential and commercial customers to use an internet-based system for direct load control. This system allows participants to shift their energy use to lower-use time periods, thus reducing peak transmission loading. This pilot is demonstrating two-way communications for load control and is one of the first regional applications of the *EnergyWeb* concept.

BPA developed the *EnergyWeb* concept in 1999 to integrate the utility electrical system with tele-

communications systems and the energy market in an effort to:

- Optimize loads on the electrical network,
- Reduce costs to consumers and utilities,
- Facilitate the integration of renewable resources,
- Increase electrical system reliability, and
- Reduce environmental impacts of load growth.

The pilot project will demonstrate the potential for using various internet-based tools to aggregate commercial and residential loads for direct control of energy use.

The pilot hopes to aggregate commercial and residential loads for energy and peak capacity advantages to the transmission grid. The project will also take advantage of intelligent-building controls as well as distribution and transmission system information.

This pilot will help residential and commercial consumers save money by changing their energy use. Commercial consumers can reduce utility demand charges and residential consumers can receive utility rebates. A utility should be able to change their peak use profile by curtailing "discretionary loads" when consumers temporarily do without service for a short period of time (such as turning off the air conditioner and allowing the room temperature to rise a few degrees.) Consumers can also take advantage of "flexible loads" by shifting load to another time period (for example, having enough storage capacity in a water heater so that its operation can be delayed with minimum impact.)

Distributed generation aggregation pilot (Olympic Peninsula, Wash.)

BPA is testing the use of small-scale power generation technology (known as distributed generation) to determine the feasibility of using standby generation, as an element in a broad plan, to defer the construction of new transmission line on the Olympic Peninsula in Washington. In the pilot, the distributed generation would only be triggered on an emergency basis, giving customers a day-ahead or less notice of the need to start the distributed generation.

Celerity Energy, of Portland, Ore., will manage and control the distributed generation resources through an internet-based communications and applications platform.

Olympic Peninsula pilot projects yield results

(continued from page 1)

of Shelton, Wash.; and the U.S. Naval Shipyard at Bremerton and the Navy's submarine base at Bangor, Wash.

"This pilot program is an exciting first step in our exploration of non-wires solutions to meeting transmission needs. Before we decide to build a transmission line, we want to make sure we have fully considered all options – not just traditional construction," said Brian Silverstein, BPA chief engineer.

BPA owns and operates about 75 percent of the Pacific Northwest's transmission grid. The system includes more than 15,000 miles of transmission lines and 285 substations. The lines network across 300,000 square miles in Oregon, Washington, Idaho, Montana and sections of Wyoming, Nevada, Utah and California. On the Olympic Peninsula, BPA transmission lines run north from Olympia through Mason County on the way to Clallam County. ■

(continued on page 3)

Pilot projects explore innovative technology

(continued from page 2)

The platform provides critical information and controls the devices to benefit both the customer and the transmission grid.

BPA is also considering environmental mitigation measures for the pilot including the use of alternative fuels (bio-diesel, natural gas), oxidation catalysts, limited operating hours, noise reduction and other issues.

To date, BPA has contacted hospitals, local governments, utilities and casinos to gauge their interest in participating in this pilot.

Load reduction and distributed generation pilot (Richland, Wash.)

BPA is piloting two projects in Richland, Wash., to test load reduction and the use of distributed generation.

In partnership with the Pacific Northwest National Laboratory, BPA will install remotely accessible load-shedding equipment and software in two commercial buildings in Richland to determine how much energy can be reduced for limited periods of time in a single building. The goal of this pilot will be to demonstrate a system that uses Internet devices to control and monitor dispersed electric loads. It will also evaluate if this approach is a reliable and quantifiable resource for non-wires solutions.

BPA is also testing how major facility loads (such as air conditioning) can be turned off for short periods of time without major impact on the systems or tenants of

Energizing the Northwest Conference

Sept. 28-29, 2004

The Bonneville Power Administration will host, *Energizing the Northwest Today and Tomorrow*, a two-day symposium on system reliability and environmental stewardship through energy efficiency, two key values shared by many in the Northwest.

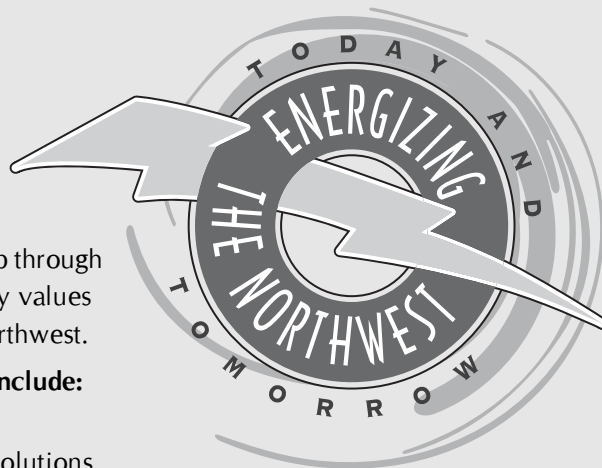
Transmission topics will include:

- System adequacy,
- Progress in non-wires solutions planning and implementation,
- Idea-sharing for regional collaboration,
- Technology and innovation.

Energy Efficiency topics will include:

- Current and future regional acquisition and infrastructure programs,
- EnergyWeb and GridWise™,
- Technologies,
- Education,
- Implementation,
- Policies and more.

Presentations will consist of special speakers, panels and concurrent sessions that will



engage regional stakeholders on these important issues. A trade-show will showcase non-wires solutions, transmission and energy-efficient technologies, as well as a variety of product and service providers.

The conference will be held at:

**DoubleTreeHotel/Jantzen Beach
909 North Hayden Island Drive
Portland, Ore.**

For more information and web address, go to: www.bpa.gov/conferences.

a building. Extending the target load-shedding time periods for one-, two- and three-hour durations year-round will be explored, as will recognizing the time of day of events and the impacts on systems and tenants. Also, coinciding load-shedding events with the transmission and distribution peak loads will be studied by BPA during the test period.

Another pilot will install a 30-kilowatt microturbine in a commercial building and test how remote-access system controls can be used to operate and monitor distributed-generation. ■

First Northwest workshop held to address forecasting concerns

In today's transmission world, electric grids are increasingly difficult to manage. Transmission paths across the region are constrained. Load forecasts differ from actual loads and transmission construction is an uncertain enterprise. Under this pressure, BPA, the Northwest Power Pool and the Northwest Power and Conservation Council are planning a Regional Transmission Load Forecasting Workshop to share common load forecasting concerns.

Derived from issues that came out of the Northwest Non-Wires Solutions Round Table, the workshop will discuss how the region currently forecasts and how it plans to move forward with better forecasting coordination to optimize transmission investments.

"At the workshop, we would like to see the area come together to discuss load forecasts used in long-term transmission planning. We need to understand the different assumptions used in the region. We hope to reach consensus on how to develop consistent load forecasts to use when developing transmission plans," said Dana Reedy, Northwest Power Pool transmission planning manager.

During the workshop, discussion topics will be centered around: regional cooperation, regulatory requirements, user needs and methodological issues affecting forecasting. There will also be case studies showing how load forecasting affects investments.

"There is a general lack of understanding on how load forecasting plays into transmission planning," said Shep Buchanan, economist for the Bonneville Power

Administration. "If utility forecasters understood the importance behind accurate load numbers, they would strive for accurate forecasts, which help transmission planners to optimize system investments."

The workshop is designed for load forecasters, transmission planners, operators and schedulers, transmission customers, regulatory agencies and all interested parties.

Attendance is open to the public, please RSVP with Laura Williams, lewilliams@bpa.gov or (360) 418-8633. ■

Regional Transmission Load Forecasting Workshop

June 16, 2004
8:30 a.m. to 4:30 p.m.

Bonneville Power Administration
Rates Hearing Room
911 N.E. 11 Ave.
Portland, Ore., 97232

*Co-sponsors: Northwest Power Pool
and Bonneville Power Administration*

BPA outlines non-wires targets for 2004

At the Non-Wires Solutions Round Table board meeting in January, BPA outlined its non-wires targets for 2004:

- Complete high-level studies on two new proposed transmission projects.
- Complete a detailed study on the Olympic Peninsula.
- Implement the six institutional barrier actions plans developed by the Non-Wires Solutions Round Table.
- Design and implement 2004 pilot projects.
- Finalize criteria for identifying pilot projects for fiscal years 2005 and 2006.
- Conduct public outreach on non-wires efforts to help shape changes to BPA's transmission planning process.
- Initiate a policy environmental impact statement, incorporating the proposed changes to the planning process.
- Issue a request for proposals for co-funding and partnership with the fiscal 2005-2006 pilot projects. ■

For more information

The Non-Wires Solutions Round Table was formed in 2003 to assist BPA in determining whether non-wires alternatives are viable options to transmission expansion. It also helps BPA determine economic, technical and institutional barriers preventing the use of non-wire solutions in transmission planning.

For more information on the non-wires initiatives, please visit the web at www.transmission.bpa.gov/PlanProj/Non-Construction_Round_Table/ for more information.

The *Non-Wires Solutions Update* newsletter is published quarterly. For more information or to receive additional copies, please contact Darby Collins at (360) 418-8465 or email dacollins@bpa.gov. ■